

IN THE CLAIMS:

1. (Currently Amended) ~~A communications system in a~~ A modular programmable controller (50) ~~which comprises,~~ comprising:

~~several~~ a plurality of smart modules (20,30) ~~each provided with~~ comprising its own processing unit (21,31) ~~and which comprises;~~

an internal communications bus (5) ~~for connecting the~~ plurality of smart modules ~~of the programmable controller (50) with each other, characterized by the fact that the;~~

a communications system enables exchanges of information to be performed configured to exchange information on the internal communications bus (5) ~~in compliance with~~ using the TCP/IP communications protocol and at least one other non-TCP/IP communications protocol; ~~and by the fact that,~~

wherein each smart module for exchanging information in compliance with exchanges is configured to exchange information using the TCP/IP communications protocol, ~~a smart module (20,30) of a programmable controller (50) includes~~ having its own IP address (24,34) and a TCP/IP stack (22,32) ~~which may be configured to be~~ executed by the processing unit (21,31) of the corresponding smart module (20,30).

2. (Currently Amended) The communications system according to claim 1, ~~characterized by the fact that a modular programmable controller (50) comprises~~ further comprising at least a one network module (10), connected to an external TCP/IP network (9), ~~enabling an smart coupler (20,30) of the programmable controller (50) to directly perform exchanges~~ wherein at

least one of the smart modules is configured to exchange ~~of information in compliance with~~
using the TCP/IP communications protocol ~~on~~ over the TCP/IP network (9), via the internal
communications bus (5).

3. (Currently Amended) The communications system according to claim 2, wherein
~~characterized by the fact that~~ the internal communications bus (5) ~~includes several~~ comprises a
plurality of separate communications channels (6,7) ~~providing~~ for the simultaneous flow of
frames ~~complying with~~ in the TCP/IP protocol format together with frames ~~complying with other~~
~~protocols in the format of at least one other non-TCP/IP communications protocol.~~

4. (Currently Amended) The communications system according to claim 3, ~~characterized~~
~~by the fact that a programmable controller (50) includes several~~ further comprising a plurality of
network modules (10,10') ~~connected to several~~ a plurality of internet networks (9,9'), each
network module (10,10') ~~using~~ configured to use a different communications channel (6,6') for
the simultaneous flow of frames on the internal communications bus (5).

5. (Currently Amended) The communications system according to claim 4, ~~characterized~~
~~by the fact that, for directly accessing several internet networks (9,9'), a~~ wherein the plurality of
smart modules ~~module (20) of a programmable controller (50) includes several~~ respective is
configured to use a plurality of IP addresses (24,24') to access directly the plurality of internet
networks.

6. (Currently Amended) The communications system according to claim 3, ~~characterized by the fact that, in a programmable controller (50), a~~ further comprising at least one network module (10) connected to the TCP/IP network (9) includes, the at least one network module comprising:

[[-]] a driver (19) for ~~access to~~ accessing the link layer of the TCP/IP network (9),

[[-]] a table for storing the IP address of each of the different plurality of (20,30) of the controller (50), smart modules capable of accessing the TCP/IP network (9),

[[-]] means (13) for filtering and redirecting ~~the IP~~ frames from the TCP/IP network (9) according to the IP address (24,34) of the corresponding smart modules.

7. (Currently Amended) The communications system according to claim 6, ~~characterized by the fact that wherein the TCP/IP stack (22,32) of a smart module (20,30) is capable of for~~ transmitting and receiving frames ~~with an encapsulation complying with~~ formatted for the link layer of the TCP/IP network (9) and ~~by the fact that the~~ each smart module (20,30) has an IP routing table for routing the frames transmitted by the smart module to the network module (10).

8. (Currently Amended) The communications system according to claim 3, ~~characterized by the fact that, in a programmable controller (50),~~ further comprising at least one network module (10) connected to TCP/IP network (9) includes, the at least one network module comprising:

[[-]] a driver (19) for access to the link layer of the TCP/IP network (9),

[[-]] two IP attachments ~~materialized by~~ comprising a first IP address (15) corresponding

to the TCP/IP network (9) and by a second IP address (14) corresponding to the internal communications bus (5) of the controller,

[[-]] a TCP/IP stack (2) ~~which may be executed~~ configured to execute in the at least one network module (10), for enabling the frames to be routed between both IP attachments.

9. (Currently Amended) The communications system according to claim 1, ~~characterized by the fact that~~ wherein the link layer of the TCP/IP network (9) is the ~~recommended~~ MAC layer in the Ethernet standard.

10. (Canceled).

11. (Currently Amended) ~~Automatism~~ An automatism unit ~~characterized by the fact that it includes one or more~~ comprising at least one programmable controller automata (50) ~~capable of~~ for communicating with each other or with the components outside the at least one programmable controller ~~world by implementing a~~ via the communications system according to claim 1.